Sustainable Rivers Project

A partnership between the
US Army Corps of Engineers
The Nature Conservancy

John Hickey, USACE and TNC

US Army Corps of Engineers

The Nature Conservancy
SAVING THE LAST GREAT PLACES ON EARTH

Missions

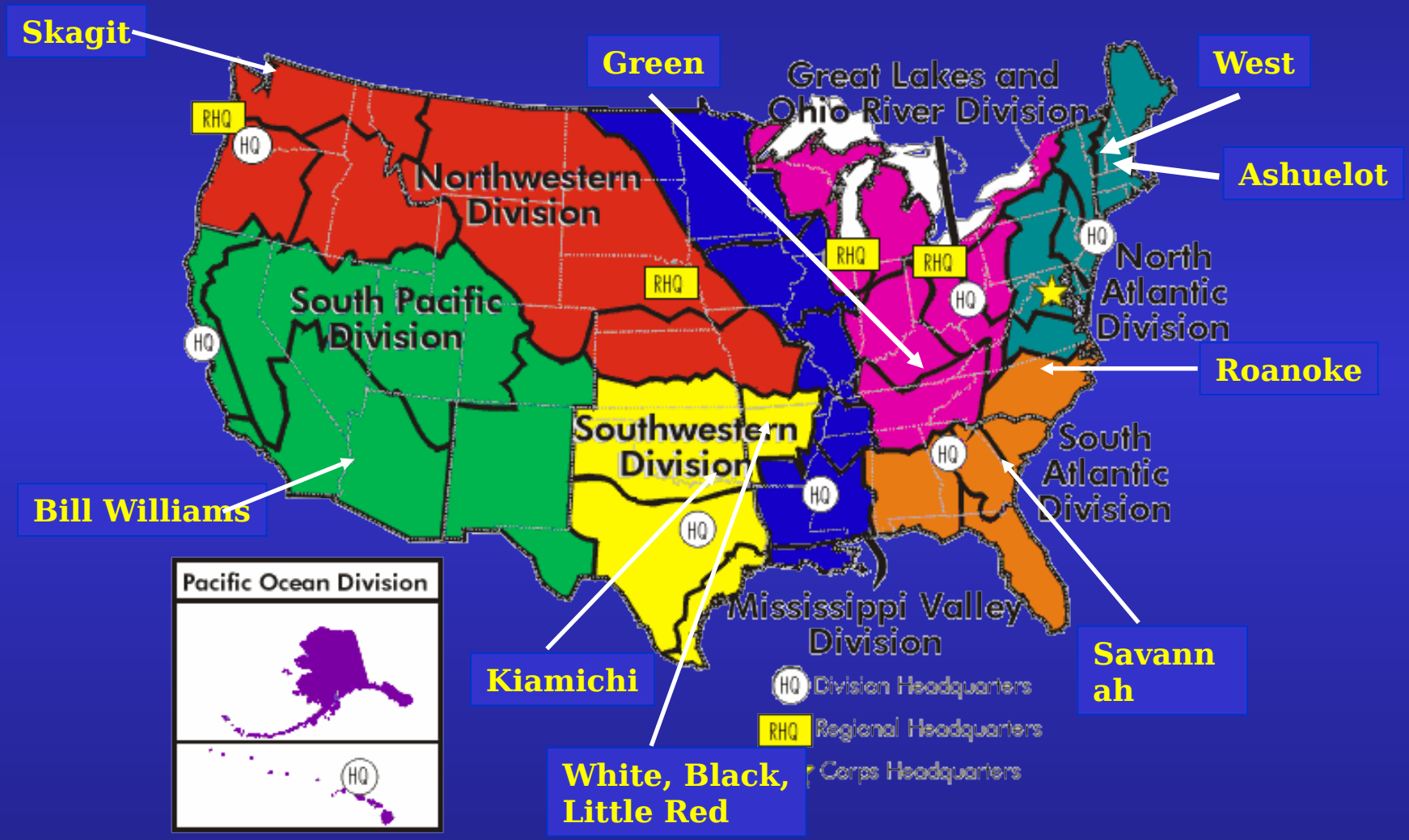
- ***The Nature Conservancy****…preserve biodiversity of life by protecting the lands and waters that plants, animals, and natural communities need to survive.*

- ***Corps of Engineers****…create synergy between water resources development and environment. Restore, manage and enhance ecosystems, locally and regionally.* (www.hq.usace.army.mil/cepa/vision/vision.htm)

Sustainable Rivers Project

Reoperate dams to achieve more eco-sustainable flows, while continuing to meet human needs.

Sustainable River Project Sites



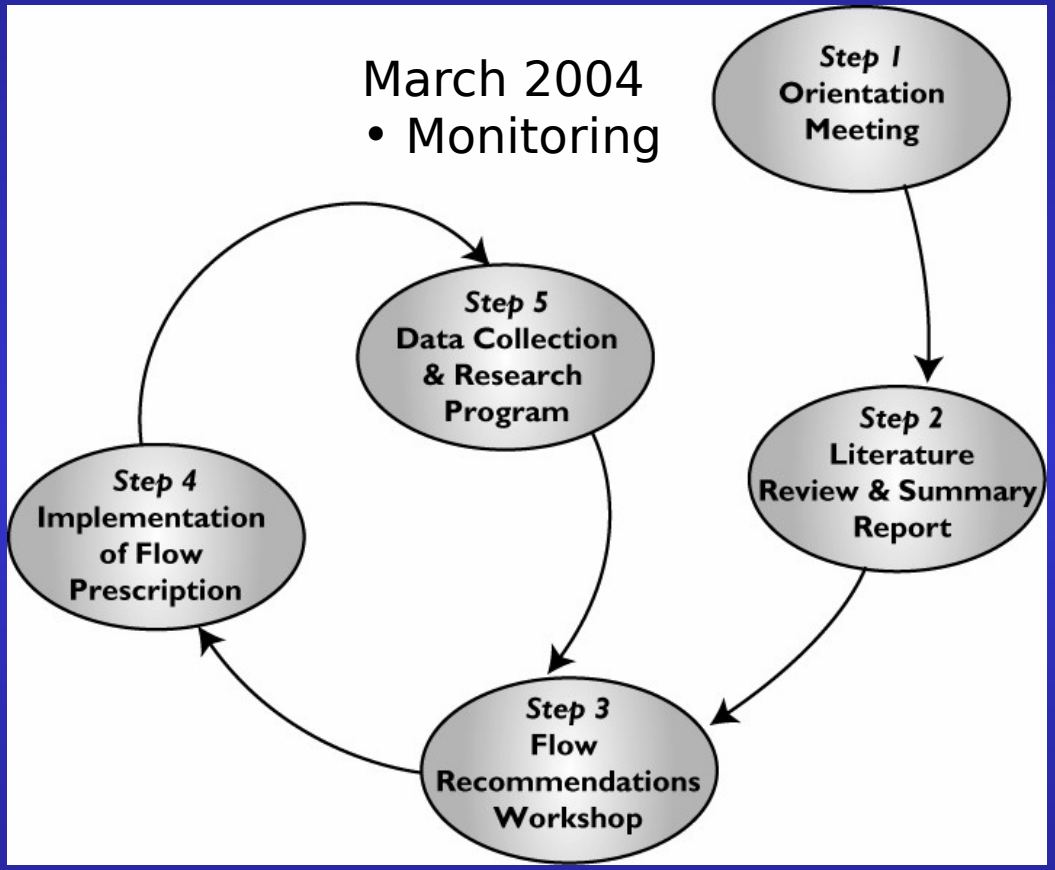
Timeline

- 2000: Memorandum of Understanding
- 2001: Green River Dam Reoperation
- 2002: Sustainable Rivers Project Initiated

- 2004: HEC - TNC Personnel Agreement
  - Feb - Mar 2004: Participate in Savannah River Efforts
  - Meetings at Jacksonville, Louisville, and Pittsburgh Districts
  - Down the Road…Bill Williams, Ashuelot, Green, Skagit…

Flow Prescription for Savannah

March 2004
• Monitoring



May
2002

March 2003
• Draft Report

April 2003
• Initial Flow Prescription

March 2004
• Pulse Release

Step 1: Orientation Meeting

- 50+ Participants
- Review and comment on the general scientific approach for flow recommendations
- Identify key science contributors
- Identify sources of relevant information for developing the flow recommendations.

Engage All Interested Parties…

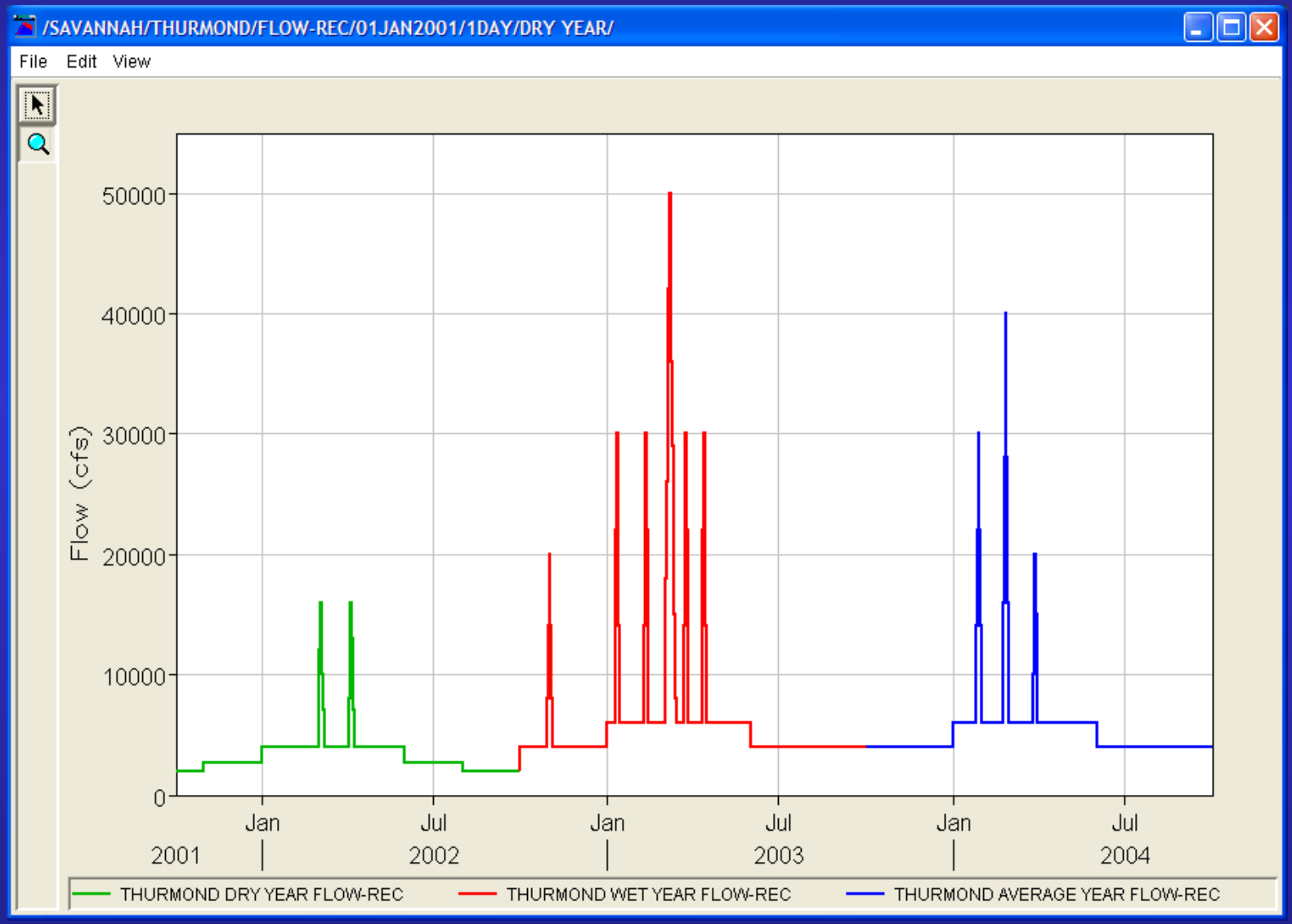
Step 2: Literature Review

- University of Georgia's River Basin Science and Policy Center
- 375 Sources

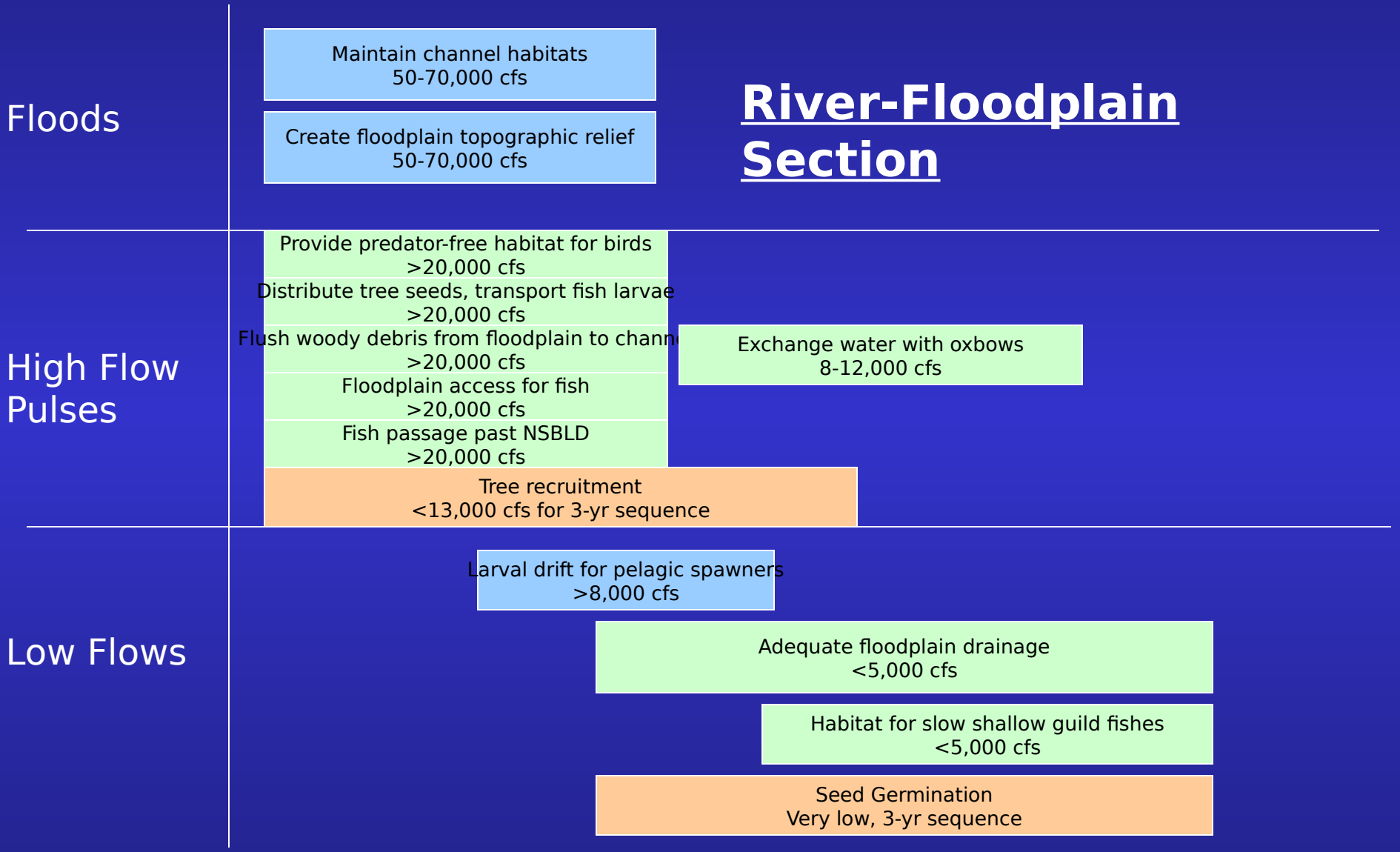
Summary Report Supporting the Development of Ecosystem Flow Recommendations for the Savannah River below Thurmond Dam, June 2003, Judy Meyer, Merryl Alber, Will Duncan, Mary Freeman, Cody Hale, Rhett Jackson, Cecil Jennings, Monica Palta, Elizabeth Richardson, Rebecca Sharitz, Joan Sheldon, and Richard Weyers

Step 3: Flow Workshop

Initial Flow Recommendations



A Different Look at the Flows

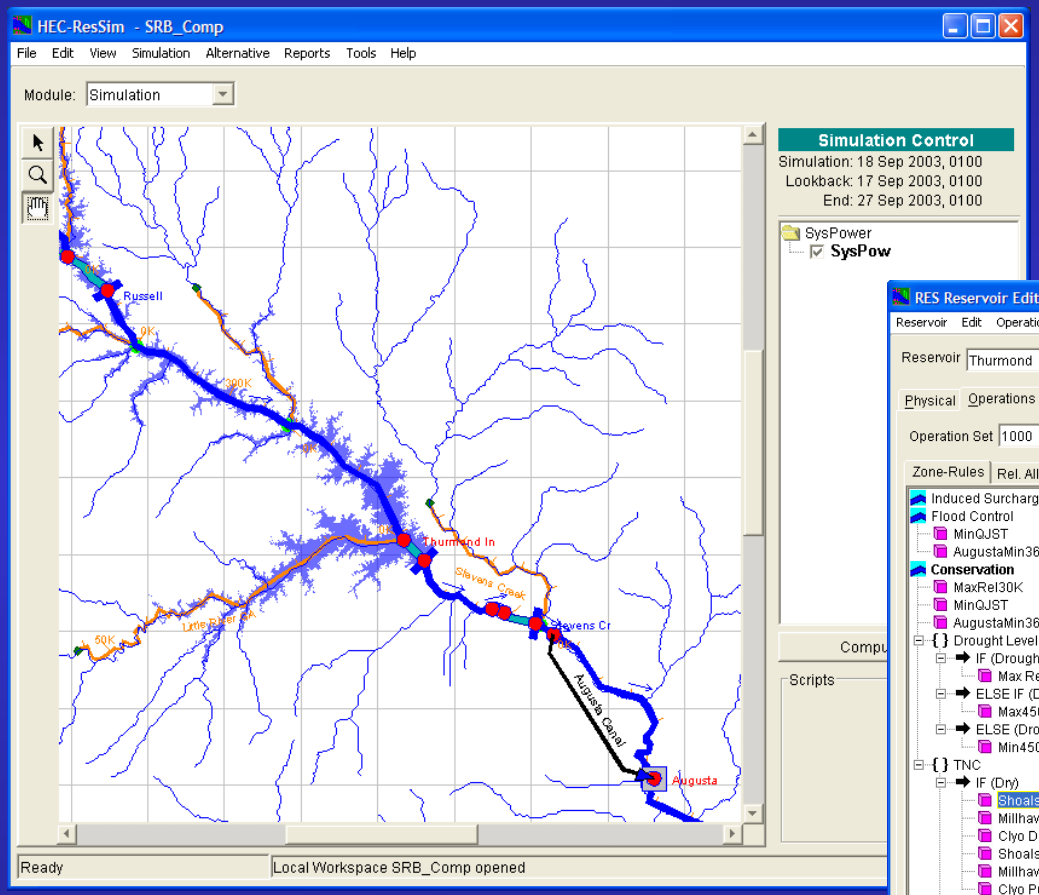


Sidebar – Alternatives Analysis

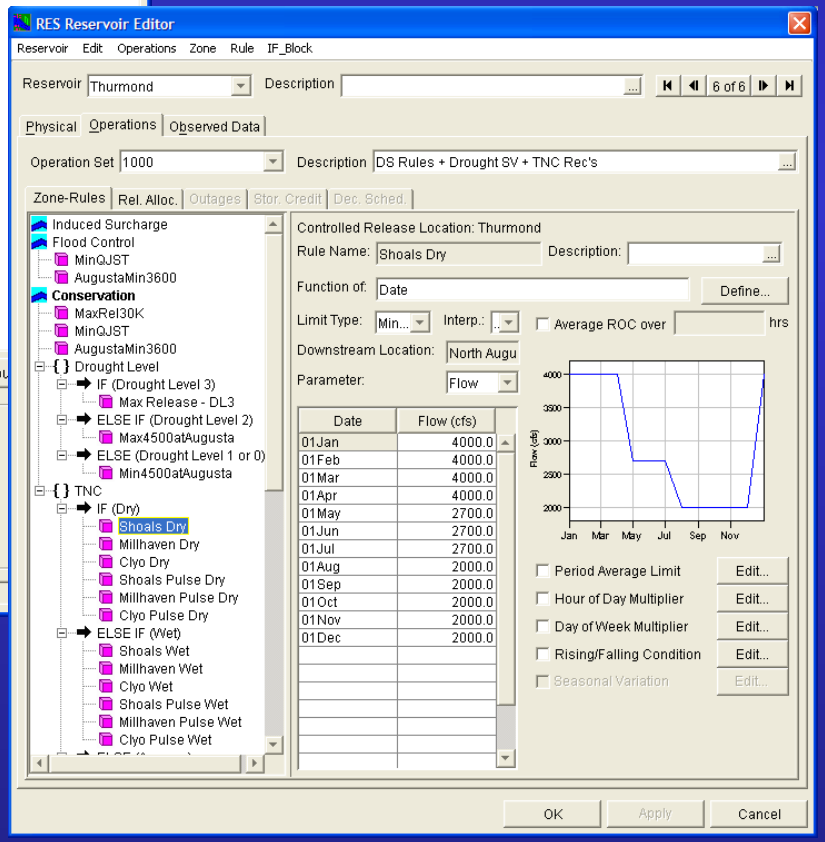
$$50!$$

$$= 3 \times 10^{64}$$

Sidebar – Alternatives Analysis

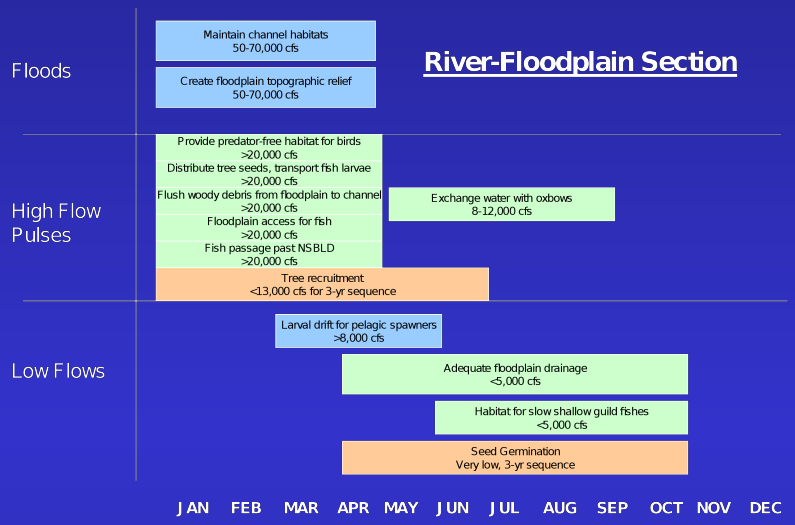


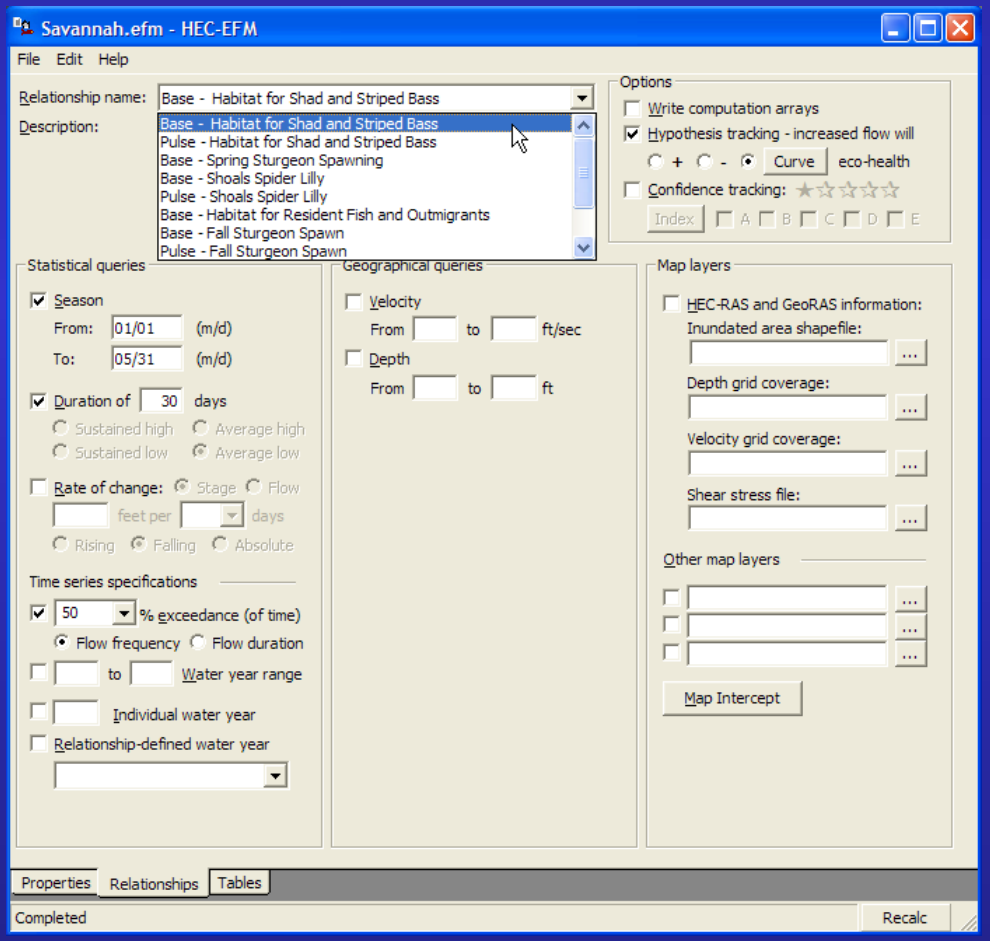
ResSim – Reservoir modeling to analyze water management alternatives



Advanced Features used by SAS – System Hydropower; State Variables; If, Then, Else Logic…

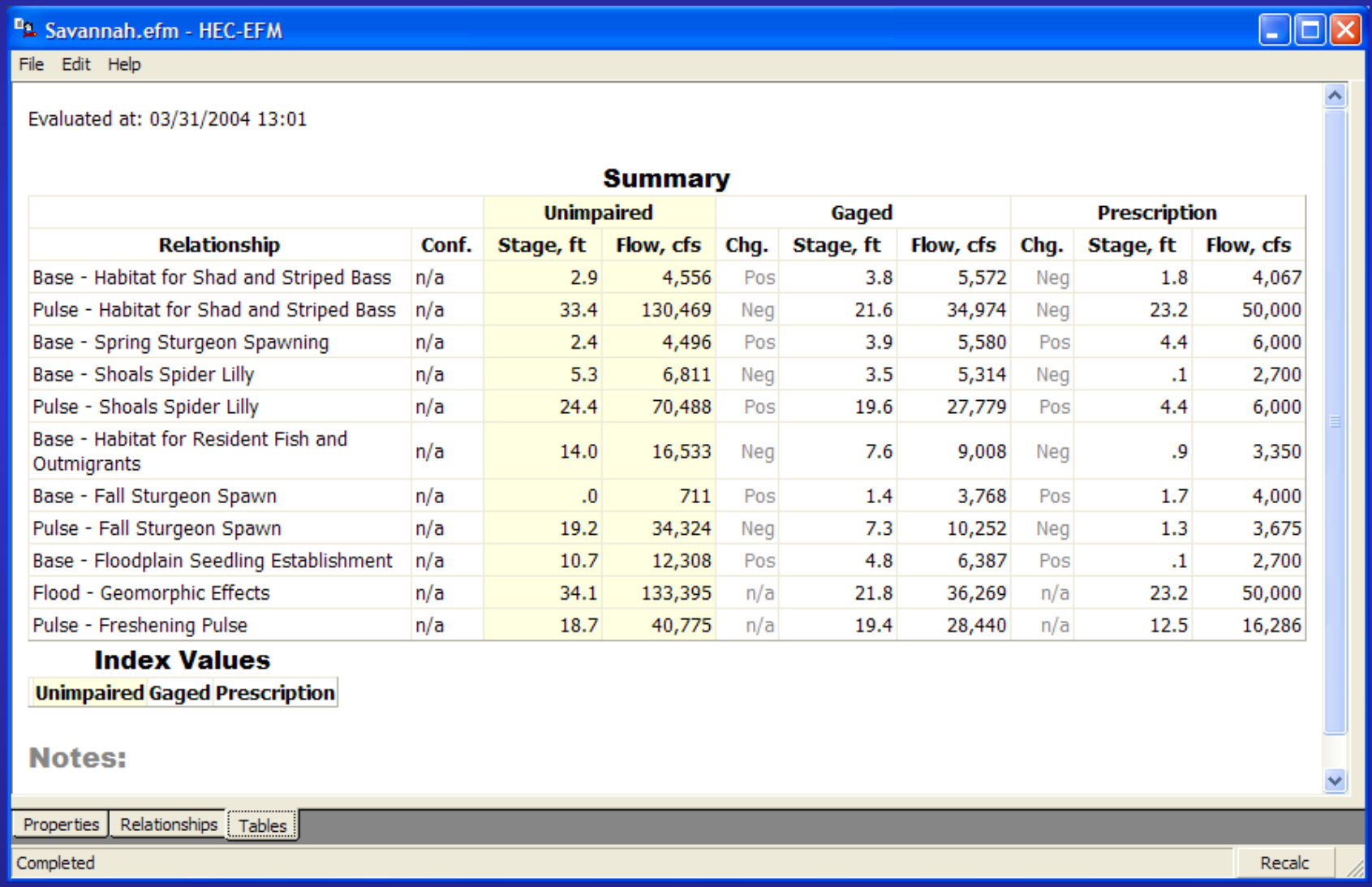
Sidebar – Alternatives Analysis


River-Floodplain Section
Floods
High Flow Pulses
Low Flows
Maintain channel habitats 50-70,000 cfs
Create floodplain topographic relief 50-70,000 cfs
Provide predator-free habitat for birds >20,000 cfs
Distribute tree seeds, transport fish larvae >20,000 cfs
Flush woody debris from floodplain to channel >20,000 cfs
Floodplain access for fish >20,000 cfs
Fish passage past NSBLD >20,000 cfs
Exchange water with oxbows 8-12,000 cfs
Tree recruitment <13,000 cfs for 3-yr sequence
Larval drift for pelagic spawners >8,000 cfs
Adequate floodplain drainage <5,000 cfs
Habitat for slow shallow guild fishes <5,000 cfs
Seed Germination Very low, 3-yr sequence
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC



EFM – Analyze alternative flows (ResSim) from an ecosystem perspective

Sidebar – Alternatives Analysis



		Unimpaired			Gaged			Prescription	
Relationship	Conf.	Stage, ft	Flow, cfs	Chg.	Stage, ft	Flow, cfs	Chg.	Stage, ft	Flow, cfs
Base - Habitat for Shad and Striped Bass	n/a	2.9	4,556	Pos	3.8	5,572	Neg	1.8	4,067
Pulse - Habitat for Shad and Striped Bass	n/a	33.4	130,469	Neg	21.6	34,974	Neg	23.2	50,000
Base - Spring Sturgeon Spawning	n/a	2.4	4,496	Pos	3.9	5,580	Pos	4.4	6,000
Base - Shoals Spider Lilly	n/a	5.3	6,811	Neg	3.5	5,314	Neg	.1	2,700
Pulse - Shoals Spider Lilly	n/a	24.4	70,488	Pos	19.6	27,779	Pos	4.4	6,000
Base - Habitat for Resident Fish and Outmigrants	n/a	14.0	16,533	Neg	7.6	9,008	Neg	.9	3,350
Base - Fall Sturgeon Spawn	n/a	.0	711	Pos	1.4	3,768	Pos	1.7	4,000
Pulse - Fall Sturgeon Spawn	n/a	19.2	34,324	Neg	7.3	10,252	Neg	1.3	3,675
Base - Floodplain Seedling Establishment	n/a	10.7	12,308	Pos	4.8	6,387	Pos	.1	2,700
Flood - Geomorphic Effects	n/a	34.1	133,395	n/a	21.8	36,269	n/a	23.2	50,000
Pulse - Freshening Pulse	n/a	18.7	40,775	n/a	19.4	28,440	n/a	12.5	16,286

Step 4: Pulse Release, March 2004

New Savannah Bluff L&D

Augusta Shoals

GERBER
STROCK

Step 5: Data Collection

Opportunities and Balance…

FW: FYI: Savannah River - Message (HTML)

File Edit View Insert Format Tools Actions Help Type a question for help

Reply Reply to All Forward

You forwarded this message on 4/7/2004 8:30 AM. Click here to find all related messages.

From: Reilly, Rosemary J LRP Sent: Fri 4/2/2004 1:48 PM
To: Hickey, John T HEC
Cc: 'cdecurtis@tnc.org'; 'awarner@tnc.org'; Luprek, Brian K LRP; Philips, Mark O LRP
Subject: FW: FYI: Savannah River

Info on the Savanna River Project….

Green light on fish highway
Atlanta Journal Constitution, GA - Mar 28, 2004
… To allow easy **fish passage**, the gates of another river barrier, the New Savannah Bluff Lock and Dam just downstream of Augusta, also were left open. **…**

River plan hopes to aid migratory fish
Charleston Post Courier (subscription), SC - Mar 30, 2004
… grounds in the spring, the US Army Corps of Engineers, along with an environmental group, are testing a plan that would have the **Savannah River** mimic a more **…**

Corps of Engineers working to make **Savannah River** flow more **…**
WIS, SC - Mar 29, 2004
(Augusta, Georgia-AP) March 29, 2004 - The US Army Corps of Engineers is working with an environmental group to test a plan to have the **Savannah River** mimic a **…**

New plan to help migratory fish in **Savannah River**
WJXX, FL - Mar 29, 2004

Questions...
The Nature Conservancy